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GROUNDWATER MONITORING DATA SUMMARY REPORT FOURTH QUARTER 1996

DOUGLAS AIRCRAFT COMPANY
C-6 FACILITY
TORRANCE, CALIFORNIA

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Kennedy/Jenks Consultants

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1.0 INTRODUCTION

The Douglas Aircraft Company (DAC) C-6 Facility is located at 19503 South Normandie Avenue, Torrance, California (Figure 1). Quarterly groundwater sampling is being conducted in response to the California Regional Water Quality Control Board - Los Angeles Region correspondence to DAC, dated 7 April 1992. This report summarizes laboratory analytical data generated through the chemical analysis of groundwater samples collected 17, 18, and 19 December, Fourth Quarter 1996.

2.0 QUARTERLY MONITORING PROGRAM

Fourth Quarter 1996 groundwater sampling was performed in accordance with standard sampling procedures. Static water level depths were measured on 17 December 1996 prior to initiating purging of groundwater from any observation well. Static water depths in monitoring wells (MW-8, MW-9, MW-18 and MW-19) located in the southern portion of the DAC property installed for the Montrose Chemical Corporation Remedial Investigation were not measured for this quarter. Well WCC-10S was either covered or destroyed as the result of demolition activities on site, and was not measured or sampled.

Groundwater samples were collected from the following fifteen wells (Figure 2) and chemically analyzed for volatile organic compounds (VOCs) by EPA Method 8240/8260 for the Fourth Quarter 1996.

> WCC-1S, WCC-2S, WCC-3S, WCC-4S, WCC-5S, WCC-6S, WCC-7S,
> WCC-8S, WCC-9S, WCC-11S, WCC-12S, WCC-1D, WCC-3D,
> and DAC-P1.

Table 1 summarizes observation well construction details. Tables 2 and 3 summarize the results of chemical analysis of groundwater samples and duplicates for major and minor constituents at the C-6 facility, respectively. Chemicals detected in samples from each observation well are shown in Figure 3. Table 4 summarizes available measured groundwater elevations to date. Estimated groundwater elevation contours for the Third Quarter are presented in Figure 4. Historical chemical concentration profiles for the indicator chemicals trichloroethene and 1,1-dichloroethene are shown in Figure 5. Copies of laboratory data sheets, laboratory/field Quality Control data sheets, groundwater purge and sample forms, and Chain-of-Custody records are included in Appendices A, B, C, and D respectively.

2.1 Groundwater Sampling Procedures

Prior to collecting groundwater samples from each well, groundwater was purged using an electrical submersible pump that was temporarily installed in the observation well. After lowering the pump to the approximate mid-point of the saturated well screen, approximately three to five wetted casing volumes of groundwater were purged from the well until the following groundwater monitoring parameters had stabilized to within 10% of preceding values: pH, electrical conductivity, and temperature. Purged groundwater was stored onsite in DOT approved 55 gallon barrels pending the results of laboratory analysis of samples.

Following groundwater purging, the flow rate of the submersible pump was reduced to 200 milliliters/minute. To collect a representative groundwater sample, the pump intake valve was positioned at the approximate mid-point of the saturated well screen interval. The recovered water was discharged into three labeled 40-ml capacity vials, preserved with HCl.

2.2 Field QA/QC Procedures

Duplicate groundwater samples were collected for the sampling round on 18 and 19 December 1996 for quality control purposes. The duplicates were collected in three HCl-preserved vials and identified by inserting the collection date after "DW-" (DW-121896 and DW-121996). No further sample identification was provided to the laboratory. Duplicate samples were taken on 18 and 19 December from observation wells WCC-1S and WCC-6S, respectively.

Following decontamination of the submersible pump, and prior to collection of groundwater samples from the successive well, an equipment rinsate blank was prepared for laboratory analysis. The equipment rinsate blank was prepared by pouring Reagent Grade II water, prepared by the analytical laboratory, over the pump and collecting the rinsate in two 40-ml vials preserved with HCl. The blank was identified following a similar protocol to that used for duplicate water samples and is identified as "EB" followed by the date. EB121996 was collected after sampling well DAC-P1. A trip blank was also analyzed for sampling and shipping activities and was identified as TB-121896.

All groundwater, duplicate, and field blank samples were transported in ice-cooled chests to Quanterra Environmental Services, Santa Ana, California using U.S. EPA-recommended Chain-of-Custody procedures.

3.0 EVALUATION OF ANALYTICAL RESULTS

3.1 Groundwater Gradient

Groundwater levels were measured prior to sampling on 17 December 1996 (Table 4 and Appendix C). The shallow zone groundwater elevations measured for this quarter ranged from 14.34 feet below mean sea level (MSL) to 15.64 feet below MSL, reflecting a rise in groundwater elevations of about 0.30 feet since the last quarter. An estimated potentiometric surface map for the shallow zone as measured on this day is presented as Figure 4. The groundwater gradient in the shallow zone was generally east to east-southeast with a southerly directed trough-like depression between observation wells WCC-12S and WCC-7S.

Insufficient data (two wells) are available to define the groundwater gradient in the deeper zone. Groundwater elevations in the two wells (WCC-1D and WCC-3D) were approximately 15.34 and 15.21 feet below MSL, respectively.

3.2 Analytical Data

The results of chemical analysis of groundwater and duplicate samples are summarized in Tables 2 and 3. Table 2 lists major constituents and Table 3 lists additional minor constituents of samples tested. The duplicate groundwater samples are indicated by an asterisk and are presented with the "original" groundwater samples. These tables include cumulative analytical data for all monitoring wells and detection limits (where available) for the listed chemicals.

The following observations are noted:

- Data for groundwater samples collected from well DAC-P1, located at the upgradient property boundary, indicate a TCE concentration of 15,000 micrograms per liter (µg/L) coming onto DAC's property (Figure 3). Toluene was also detected in well DAC-P1 at 610 µg/L. The concentrations of these chemicals were within historical ranges. DAC-P1 is screened in the shallow zone.

- Background concentrations of TCE and 1,1-DCE increased in the shallow zone upgradient or cross gradient wells WCC-2S and WCC-11S. Both contaminants are within historical ranges at concentrations of 120 to 170 µg/L of TCE and 28 to 30 µg/L of 1,1-DCE.

- Groundwater elevation data (Figure 4) and chemical concentration data (Figure 3) indicate that chemical transport in the shallow zone is generally in a southerly and southeasterly direction in the vicinity of buildings 36 and 41. Most chemical concentration data from the eastern boundary observation wells (WCC-5S, and WCC-9S) are within the same range or lower than upgradient or cross gradient "background level" wells (WCC-2S and WCC-11S).

- In general, variances of the other chemical concentrations since the last sampling remain within typical historical ranges.

- Low concentrations of 1-methylethylbenzene (MEB) were detected in samples collected from wells WCC-5S, WCC-9S, WCC-1D, and WCC-3D at 2.0, 1.5, 1.2, and 1.1 µg/L, respectively.

- Analytical data from the equipment rinsate blank, sample duplicates, trip blank, and laboratory spikes and duplicates are indicative of reliable data.

TABLE 1

OBSERVATION WELL CONSTRUCTION DETAILS
GROUNDWATER MONITORING DATA SUMMARY REPORT
FOURTH QUARTER, 1996
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Well	Date Constructed	Well Diameter (inches)	Total Depth of Borehole (Feet)	Depth of Screened Interval (Feet)	Depth to top of Sand Filter Pack (Feet)	Well Casing Material and Slot Size	Hydrogeologic Unit Screened
WCC-1S[1]	3/26/87	2	91	78-88	72	Schedule 40 PVC0.020-Inch Slots	Shallow
WCC-2S[1]	10/28/87	4	90.5	70-90	63	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-3S[1]	10/26/87	4	92	69-89	64	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-4S[1]	10/27/87	4	91.5	70.5-90.5	65	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-5S[1]	11/24/87	4	91	60.5-91	58.5	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-6S[2]	9/22/89	4	91	60-90	N/A[3]	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-7S[2]	6/8/89	4	90.5	60-90	54	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-8S[2]	6/12/89	4	90	59.5-89.5	54	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-9S[2]	9/21/89	4	91.5	60-90	55	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-10S[2,5]	6/7/89	4	90.8	60-90	54	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-11S	N/A	4	N/A	60-90(?)	N/A	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-12S	N/A	4	N/A	60-90(?)	N/A	Schedule 40 PVC0.010-Inch Slots	Shallow
DAC-P[1]	9/25/89	4	N/A	60-90(?)	N/A	Schedule 40 PVC0.010-Inch Slots	Shallow
WCC-1D[2]	6/30/89	4	140	120-140	115	Schedule 40 PVC0.010-Inch Slots	Deeper
WCC-3D[2]	6/27/89	4	140	120-140	114	Schedule 40 PVC0.010-Inch Slots	Deeper
MW-8[4]	5/10/89	4	85	65-80	62	PVC blank and 316 Stainless Steel 0.020-inch Slot Screen	Shallow
MW-9[4]	5/9/89	4	85	66-81	61	PVC blank and 316 Stainless Steel 0.020-inch Slot Screen	Shallow
MW-18[4]	3/29/90	4	84	68-83	67	PVC blank and 316 Stainless Steel 0.020-inch Slot Screen	Shallow
MW-19[4]	3/30/90	4	80	63-79	62	PVC blank and 316 Stainless Steel 0.020-inch Slot Screen	Shallow

NOTES:

1. Data from Woodward-Clyde Consultants Phase II Report, May 1988
2. Data from Woodward-Clyde Consultants Phase III Report, March 1990
3. N/A = Not Available
4. Data from Hargis + Associates, Final Draft, Remedial Investigation, Montrose Site, Torrance, Ca, October 1992
5. Well WCC-10S was covered or destroyed, and was not sampled in December 1996

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